

Serial No.: 10/054,447

Confirmation No.: 5485

Filed: January 22, 2002

For: METHOD FOR COATING MEDICAL DEVICE SURFACES

Amendments to the Claims**AMENDMENTS TO THE CLAIMS**

Please substitute the following pending claims 1-10, 233, 273-281 and 293-298 as replacement claims for the previously-pending claims. In this Amendment, claims 1, 233, 278 and 279 have been amended, claim 277 has been canceled, and new claims 293-298 have been added.

1. (Currently Amended) A method of coating a hydrophilic polymer on a surface of a medical device, wherein the method comprising:

(a) providing the medical device ~~has~~having a catechol moiety disposed on the surface of said device; and thereafter

(b) the hydrophilic polymer comprises a guanidino moiety, wherein;
the method comprises coating the medical device having the catechol moiety disposed on the surface thereof with the hydrophilic polymer comprising a guanidino moiety to form a chemical bond between the guanidino moiety of the hydrophilic polymer and the catechol moiety of the medical device surface.

2. (Original) The method of claim 1 wherein the device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprostheses medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

3. (Original) The method of claim 1 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

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4. (Original) The method of claim 1 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

5. (Previously presented) The method of claim 1 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

6. (Original) The method of claim 1 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

7. (Original) The method of claim 1 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

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8. (Original) The method of claim 1 wherein the hydrophilic polymer has a molecular weight between about 100,000 and about 2,000,000.

9. (Original) The method of claim 1 wherein the surface comprises a primer.

10. (Original) The method of claim 9 wherein the primer comprises the catechol moiety.

11-232. (Canceled)

233. (Currently amended) A coated medical device comprising a catechol moiety disposed on the surface of the medical device and a naturally occurring hydrophilic polymer comprising a guanidino moiety, wherein the guanidino moiety is chemically bonded to the catechol moiety.

234-272. (Canceled)

273. (Previously presented) The medical device of claim 233 wherein the medical device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprostheses medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

274. (Previously presented) The medical device of claim 233 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

275. (Previously presented) The medical device of claim 233 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a

titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

276. (Previously presented) The medical device of claim 233 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

277. (Canceled) The medical device of claim 233 wherein the hydrophilic polymer is a naturally occurring hydrophilic polymer.

278. (Currently amended) The medical device of claim 233279 wherein the hydrophilic polymer is a chemically synthesized hydrophilic polymer.

279. (Currently amended) The medical device of claim 233 wherein the A coated medical device comprising a catechol moiety disposed on the surface of the medical device and a

hydrophilic polymer has having a molecular weight between about 100,000 and about 2,000,000 and comprising a guanidino moiety, wherein the guanidino moiety is chemically bonded to the catechol moiety.

280. (Previously presented) The medical device of claim 233 wherein the surface comprises a primer.

281. (Previously presented) The medical device of claim 280 wherein the primer comprises the catechol moiety.

282-292. (Canceled)

293. (New) The medical device of claim 279 wherein the medical device is selected from the group consisting of a blood-contacting medical device, a tissue-contacting medical device, a bodily fluid-contacting medical device, an implantable medical device, an extracorporeal medical device, a blood oxygenator, a blood pump, a blood sensor, tubing for carrying blood, an endoprostheses medical device, a vascular graft, a stent, a pacemaker lead, a heart valve, temporary intravascular medical device, a catheter and a guide wire.

294. (New) The medical device of claim 279 wherein at least a portion of the surface forms at least one of a tube, a rod, a membrane, a balloon, a bag and a sheet.

295. (New) The medical device of claim 279 wherein the surface comprises at least one of a biocompatible material selected from the group consisting of a metal, a titanium, a titanium alloy, a tin-nickel alloy, a shape memory alloy, an aluminum oxide, a platinum, a platinum alloy, a stainless steel, a MP35N stainless steel, a elgiloy, a stellite, a pyrolytic carbon, a silver carbon, a glassy carbon, a polymer, a polyamide, a polycarbonate, a polyether, a polyester, a polyolefin, a

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polyethylene, a polypropylene, a polystyrene, a polyurethane, a polyvinylchloride, a polyvinylpyrrolidone, a silicone elastomer, a fluoropolymer, a polyacrylate, a polyisoprene, a polytetrafluoroethylene, a rubber, a ceramic, a hydroxapatite, a human protein, a human tissue, an animal protein, an animal tissue, a bone, a skin, a tooth, a collagen, a laminin, a elastin, a fibrin, a wood, a cellulose, a compressed carbon and a glass.

296. (New) The medical device of claim 279 wherein the hydrophilic polymer is selected from the group consisting of a water-soluble polymer, a water-swellable polymer, a polymer used to reduce friction on a surface, an acrylamide polymer, a methacrylamide polymer, a 2-acrylamido-2-methylpropane sulfonic acid polymer, an acrylic acid polymer, a N-(3-aminopropyl) methacrylamide hydrochloride polymer, a polyvinylpyrrolidone, a polyethylene oxide polymer, a saccharide, a glycan, a hyaluronic acid polymer, a chondroitin sulfate polymer, a poly(alkylene oxalate) polymer, poly(vinyl alcohol) polymer, an ionene polymer, a caprolactone copolymer, a chitin polymer, an agarose polymer, a cellulosic polymer, a poly(maleic anhydride) polymer and a polysaccharide.

297. (New) The medical device of claim 279 wherein the surface comprises a primer.

298. (New) The medical device of claim 297 wherein the primer comprises the catechol moiety.